

Mescaline HCl from *Echinopsis pachanoi*

2014 Citizens Anomalous

Initial Processing:

Thirty feet of San Pedro cactus was harvested and cut into logs. The tips were retained for propagation.



The logs were sliced into thin disks and transferred to a large plastic container.



For the very thick logs with woody cores, the flesh was peeled from the core and diced.



Final result of initial preparation:



These were transferred to a deep freeze and frozen overnight at -25°C for the purpose of breaking down the cell walls.



Reduction to Syrup:

After freezing for 24 hours, the material was removed from the freezer and allowed to thaw to room temperature:



The cactus was then reduced to liquid with an electric blender:



At the conclusion of the blending, approximately 38 liters of pulverized cactus resulted:



To facilitate separation of the liquids from the cactus pulp, a hydraulic press was constructed from salvaged materials:





The resulting press was covered in thick plastic so as to prevent the valuable cactus juice from soaking into the wood:





The press was designed to fit into a stainless steel basket suspended in a plastic bucket:



The pulverized cactus was transferred to the steel colander for pressing. Unfortunately, it was immediately discovered that the holes in the colander were unacceptably large. To remedy this issue, the colander was simply sleeved with a coarsely woven pillow case so that the pillow case would serve as a filter. This proved satisfactory.



Apparatus assembled and ready for pressing:



Hydraulic jack wedged between apparatus and bench above. The black fabric next to the base of the jack is the filter fabric.







Solids freshly loaded and awaiting pressing:



After loading the material into the filter, the open end of the filter was clamped to the bench. The other end was twisted as tightly as possible so as to force as much of the liquid through as possible prior to application of the hydraulic unit.





After pressing, roughly 26 liters of liquid was recovered:



This was boiled down to a syrup on a turkey frier:





Material at this stage was sampled. Two subjects each drank roughly 500 ml of the liquid. The result in both subjects was typical of medium dose whole cactus intoxication. As one of our group had never used this substance before, it was felt it appropriate that his introduction to the material follow the same Traditional Path as the others of the group by using the whole cactus prior to using purified crystal. The practice of sampling the syrup prior to conversion to crystal accomplished this goal.



The stuff tasted horrible beyond measure. Exactly the way it should. It tasted even worse coming back up a couple of hours later.

Notice the clarity of the syrup. Notice also the fine solids suspended in the bottom of the liquid. These will be fine filtered out prior to basing.



To make certain that all the alkaloid was collected, the pressed solids were boiled for 12 hours on low heat, the liquid pressed out and added to the bulk of the syrup. The resulting solids were secured in the freezer for later processing.





Liquid was almost ready at this point but needed still to be fine filtered:



Fine filtering the syrup:



Appearance of material after filtering:



Final result was about 7.5 liters of brown liquid. This was placed in the deep freeze for storage.



Basing:

This sequence involves adding a strong base to the syrup so as to convert the mescaline salts present in the syrup into mescaline freebase. This is done, of course, because mescaline freebase is not soluble in basic solution. Once the mescaline exists in freebase form, it will float to the top like any other oil. The freebase can then be easily collected by dissolving it into a non-polar solvent such as xylene.

The syrup was frozen solid so that it would be extremely cold upon application of the sodium hydroxide basing agent. This enhances safety. But as the material began to melt, it was noticed that the syrup has frozen into colored strata that very closely resembled the cactus itself.



Observing the way the syrup froze into different colored layers, one could not help but speculate as to the composition of the various layers and contemplate if one could employ freezing as a crude means of separation of impurities. Further investigation is required.



The ice was broken up into fine pieces:



Materials assembled for basing: Large stainless steel pot. Distilled water. A kilo of sodium hydroxide and xylene.



The lye (sodium hydroxide) was dissolved into enough water to make a thin syrup:



This was then added to the frozen slush. As the material was already nearly freezing, the temperature did not rise dangerously, however, the heat was sufficient to completely defrost the syrup in short order.



Syrup immediately after adding the lye water. The characteristic scent of mescaline freebase was immediately noticed.



To further facilitate the separation of the amine from the liquid, a liberal amount of rock salt was powdered and added to the extraction.





The salt was thoroughly stirred into the liquid:



Roughly 1.5 liters of xylene was added.



This was then stirred vigorously but not so much so as to create an emulsion.



Close up of the xylene layer floating on top of the aqueous layer. Notice the mirror perfect separation.



Finally, the extraction was sealed and placed in the sun for 24 hours, however, it was opened and stirred every 2 hours.



Salting:

The purpose of this step is to remove the xylene/mescaline freebase solution from the extraction and apply hydrogen chloride to the liquid so as to render mescaline hydrochloride. As mescaline hydrochloride is insoluble in xylene, the material can be easily separated from the liquid with a common coffee filter.

Materials assembled for the salting. There is a device used to draw the xylene off the extraction, hydrochloric acid, a hydrogen chloride gas generator, a vacuum pump, anhydrous calcium chloride crystals, a Guy Fawkes mask and an assortment of large stones.



Equipment in use:



Using vacuum wand to remove xylene from extraction.



Xylene accumulating in collection jar.



Extraction after all xylene removed:



Xylene after separation:



Hydrogen chloride gas generator. One simply fills it about 1/6 of the way full of calcium chloride crystals and then squirts in aqueous HCl and quickly secures the cap back on the bottle. Reasonably dry gas then comes out the other end of the hose. This is an elegantly simple device but it really lacks the capacity for an extraction of this size. Regardless, it got the job done.



Freshly gassed mescaline hydrochloride crystals on the bottom of the container.



The xylene was then poured through a coffee filter so as to collect the mescaline crystal.



The white crystalline material in the filter is mescaline hydrochloride.



Close up of the material in the filter. Notice the clearly crystalline appearance of the product. Crystalline precipitation of mescaline hydrochloride has not previously been observed on a first pass gassing right off the extraction. This behavior can only occur if the freebase solution is extremely clean. Impurities present in levels above some unknown but small cut off *always* result in precipitation as white powder, not crystal.



Above and to the left of the bright spot on the jar one can see clear as glass mescaline HCl crystal on the salting jar. The jar was rinsed out with 95% ethanol and the resulting crystal was left behind once the solvent evaporated from the glass.



Close up of the crystalline mescaline HCl on the salting jar. This material has undergone no purification whatsoever.



Crystallization:

Crystallization is critical to optimum purity. In this exercise, the following regime was employed three times on the material.

- A beaker of anhydrous ethyl acetate was brought to a rolling boil.
- The crude mescaline was added to the solution which was then returned to a boil.
- With constant stirring, just enough 95% ethanol was added to dissolve the alkaloid.
- Once fully dissolved, the solution was filtered to remove insoluble particulates.
- The liquid was subsequently boiled down to a thick syrup.
- This syrup was placed on the bench and allowed to cool to near room temperature.
- Finally, it was flooded with anhydrous acetone and placed in the freezer for one hour.
- At the conclusion of the freezing, the crystal was collected and rinsed with very dry ice cold acetone.

The crude mescaline was placed in a beaker:



Close up of crude material. This sample is roughly 90% pure at this stage.



Notice the yellow discoloration present when the crude was dissolved into the solvents:



Syrup nearly ready to remove from the heat.



Crude material immediately after removing from freezer.



Crude material after one crystallization. Note the presence of lingering brown impurities.



This material was then crystallized twice more again using the same sequence. Notice the improved color of the crystallization liqueur after but a single crystallization.

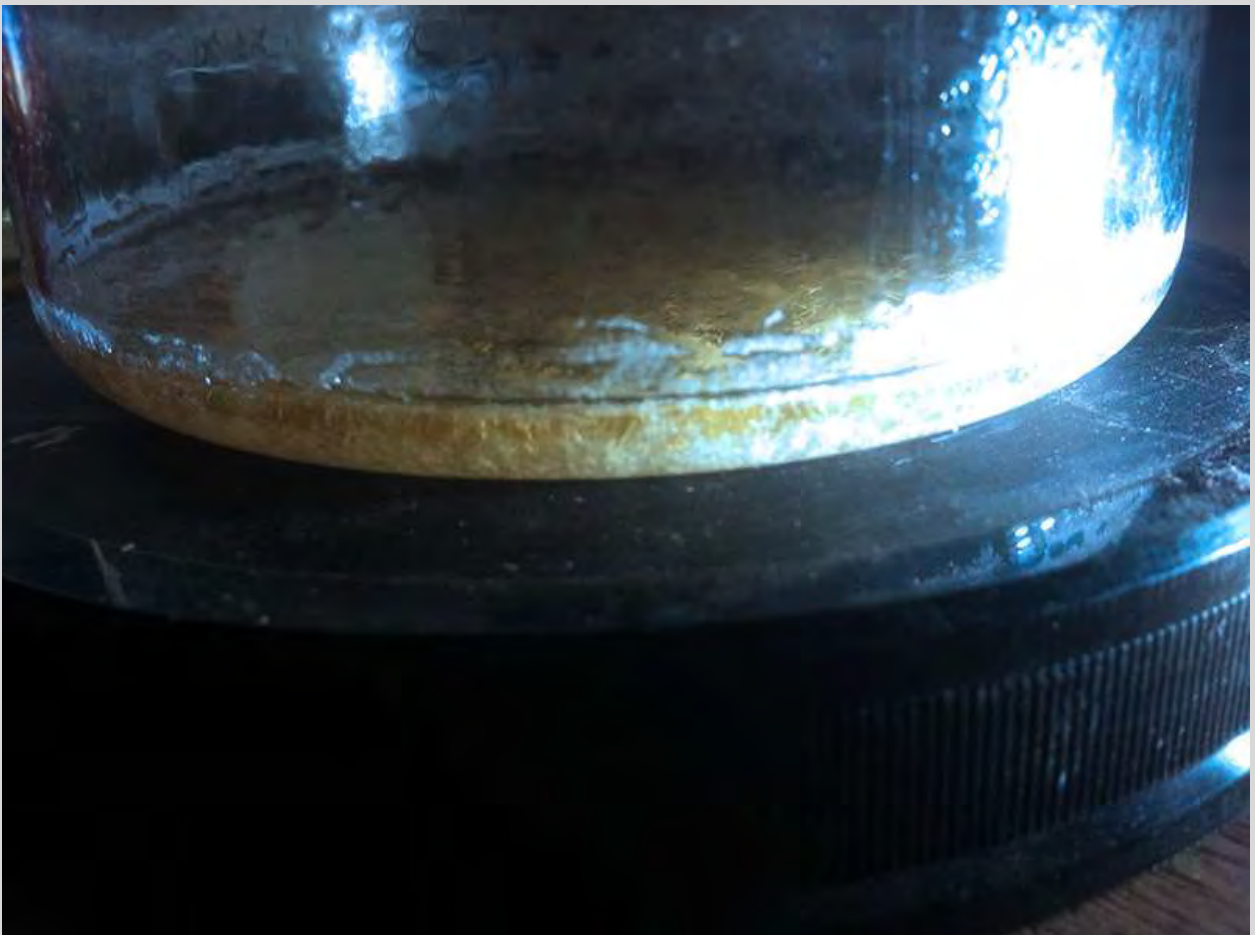




Material crystallizing on the sides of the beaker.



Crystal spontaneously forming in the beaker.



Close up of crystal patterns on the glassware.



Notice the pinwheel formations. These have not been previously observed with mescaline.



Final product after three crystallizations.



Final yield of mescaline hydrochloride was 3.7 grams.



Additional Investigations:

After a second gassing of the xylene failed to produce any significant amount of mescaline, it was decided to perform an aqueous titration on the solution and see if additional alkaloid could be recovered. It was also noticed that there was an emulsion layer that had developed. This layer was removed and the emulsion broken. None of these investigations were fruitful, however, as an unanticipated storm blew a large tree branch onto the outdoor lab bench upsetting the hotplate and spilling the results of the titration. No attempt was made to recover the material from the dirt. The photos of these steps are included as they illustrate several techniques that are quite useful.

This is the emulsion layer after removal from the extraction.



The emulsion was transferred to a large flask and boiled until separation occurred.



After boiling. Notice the clean separation.



The upper layer is still slimy but this is not emulsion. It's simply fatty material from the cactus.



Xylene from extraction added to the xylene recovered from the emulsion. Gassing this material resulted in no precipitation.



It was decided to investigate if any additional alkaloid could be recovered via aqueous titration. 48 ml of 31% HCl was dissolved in 3.78 liters of distilled water. The xylene was rinsed three times with this liquid and the aqueous layers combined.





Aqueous extracts. This material was lost to a freak weather related accident and no data as to its contents was collected.



Solids:

As any extraction yield expressed in terms of wet cactus has no useful meaning, the left over solids were dried, powdered and weighed. Obviously, there are limitations to this method as some unknown percentage of the material present in the whole cactus will be left behind in the syrup. Aside from the 3.7 grams of mescaline HCl that was recovered, no data exists for this material. However, it was felt that weighing the depleted solids would provide at least a ballpark figure for true extraction yield.

Solids were dried in convection oven and then powdered in a food processor.



453 grams of depleted cactus powder was recovered. Based on the weight of these solids, the extraction yielded .82% of dry weight.



Bioassay:

Users dosed with between 500 and 700 mg of the material. Initial onset was felt within 10 minutes of swallowing the dose. Extreme visual distortions were observed for the next 18+ hours.



Extraction technology by me!
Purification technology by tramp